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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,707	04/30/2001	Witold Kula	SJ09-2000-0121US11BM1P002	4927

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EXAMINER

MILLER, BRIAN E

ART UNIT PAPER NUMBER

2652

DATE MAILED: 03/22/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/846,707

Applicant(s)

KULA ET AL.

Examiner

Brian E. Miller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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Claims 1-21 are pending.

***Continuation Application***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/26/04 has been entered.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9, 16 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The language "wherein the upper layer includes both NiFe and CoFe" is misdescriptive, since the independent claim from which it depends from, recites "comprising a *material* selected from the group consisting of NiFe and CoFe" which would not include *both* materials as now recited.

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 4, 9, 11, 15-16, 19-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which

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was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. (a) Claims 9 & 16 recite an upper layer with "both NiFe and CoFe," however, at least in the drawings (FIG. 4 & 5A) it is only disclosed as one or the other material, not both as is not claimed; (b) claims 4, 15, 19-20 now recite that the upper layer is doped "with a material other than NiFe or CoFe for decreasing an electrical conductivity of the upper layer," however, the disclosure merely recites "that other upper layers 508 with similar microstructure (e.g., appropriately doped NiFe or CoFe) would lead to the same effect" and would not specifically encompass the newly recited limitation(s); (c) with respect to claim 11, "wherein the upper layer is non-magnetic", there is no disclosure regarding this.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 2, 5-8, 11, 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Mao et al (US 6,490,140). (As per claim 1) Mao et al discloses a GMR spin valve sensor for use in a magnetic disk drive device (col 1, lines 21-22), as shown primarily in FIG. 5, including: a pinned layer 126 having a pinned layer magnetization; a free layer 130 disposed adjacent the pinned layer, the free layer having a free layer magnetization perpendicular to the pinned layer

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magnetization in the absence of an external field; a spacer layer 128 disposed between the free layer and the pinned layer; a pinning layer 124 disposed adjacent the pinned layer for fixing the pinned layer magnetization; an underlayer 138 disposed adjacent the pinning layer, the underlayer comprising NiFeCr (re claim 5); an upper layer 142 disposed adjacent the underlayer and the pinning layer, the upper layer comprising a material selected from the group consisting of NiFe and CoFe (e.g. NiFe) for increasing a GMR ratio associated with the SV sensor; (re claim 2) wherein the upper layer has a thickness of between 4-20 Angstroms (see col. 10, lines 2-5) and is considered to be "doped"; (re claim 7) the underlayer includes a Cr atomic % of 40 +/- 5 (col. 8, lines 1-3); (re claim 8) the pinned layer comprises a Ru layer 144 and CoFe layers 146, 142 disposed on either side thereof; (re claim 10) the free layer comprises a NiFe layer 150 and CoFe layers 152, 148 disposed on either side thereof; (re claim 11) wherein the upper layer is considered to be non-magnetic. (As per claims 1 & 21) With respect to the newly added limitation, i.e., "wherein the sensor provides an increase...when compared to an otherwise identical sensor not having the upper layer" is not further limiting, thus otherwise moot, because Mao et al discloses the aforementioned upper layer.

With respect to claim 21 and the recitation of an actuator which moves the SV sensor, it is inherent to the recitation of a magnetic disk drive in Mao et al (col. 1, lines 20-21) that an actuator would be present along with the respective controller, for proper operation of the disk drive.

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***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 3, 17, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mao et al. For a description of Mao et al, see the rejection, supra. Mao et al only remains silent as to the upper layer 142 being formed of CoFe, in place of NiFe. As CoFe and NiFe are commonly known ferromagnetic materials, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have readily substituted CoFe for NiFe, or vice versa, for the upper layer material. The motivation would have been: lacking any unobvious or unexpected results, a skilled artisan would have readily realized that the two materials are equivalent and therefore substitutable for each other. Furthermore, it has been held that selecting a known material on the basis of its suitability for the intended use is a matter of obvious design choice; see *In re Leshin*, 125 USPQ 416 (CCPA 1960).

Furthermore (as per claims 3, 17, 18), with respect to the upper layer thickness being “less than 5A”, while Mao et al sets forth a preferred range for this layer to be “preferably in the range of

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5A to about 30A”(emphasis added by the Examiner), if not encompassing the claim limitation, at least it would have been obvious to have modified the thickness to do so, the resulting thickness being provided through routine engineering experimentation and optimization, in lieu of any unobvious or unexpected results and/or criticality.

Additionally, the law is replete with cases in which the mere difference between the claimed invention and the prior art is some range, variable or other dimensional limitation within the claims, patentability cannot be found.

It furthermore has been held in such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range(s); see *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Moreover, the instant disclosure does not set forth evidence ascribing unexpected results due to the claimed dimensions; see *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338 (Fed. Cir. 1984), which held that the dimensional limitations failed to point out a feature which performed and operated any differently from the prior art.

11. Claims 10, 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mao et al in view of Huai et al (US 6,222,707). For a description of Mao et al, see the rejections, supra. Additionally (re claims 10, 12), with respect to the NiFeX underlayer, where “X is not Cr”, although Mao et al does not specifically recite another alternative material in place of Cr, from at least statements within the reference, e.g., col. 2, lines 21-24, col. 3, lines 64-67, col. 11, lines 39-42, it is considered that it would encompass one having ordinary skill in the art to provide an

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appropriate alternate to "Cr". Huai et al is cited to disclose an appropriate spin valve MR which includes a seed layer made of NiFeX, wherein X is Cr in a preferred embodiment, however, is considered to encompass other materials as well. From these teachings, it would have been considered well within the skilled artisan to have substituted other materials for X other than "Cr", which would have similar characteristics thereto Cr. The motivation would have been: lacking criticality and/or any unobvious or unexpected results, other appropriate materials would have resulted through routine engineering experimentation and optimization, as would have been realized by a skilled artisan.

***Response to Amendment***

12. Applicant's arguments filed 2/26/04 have been fully considered but they are not persuasive.

A...Applicant asserts that the newly added limitation to claim 1, with respect to the 7% change, however, this is considered moot since the prior art reference in Mao includes an upper layer.

B...With respect to claim 3, applicant asserts the new limitation "wherein the upper layer has a thickness less than 5A," avoids the prior art range cited by the Examiner in Mao et al. Mao et al discloses "about 5A to about 30A, and more preferably approximately 10A." While "about" could encompass something lower than 5A, e.g., 4.9A, the Examiner at least considers this slight difference as not a *patentable* distinction, as discussed above.

C...With respect to claim 10 and the limitation of the underlayer being NiFeX with X being not Cr, while not specifically disclosed by Mao et al, at least the combination with Huai et al, would have made it obvious. Furthermore, it has been held to be within the general knowledge of a



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skilled artisan to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice; see *In re Leshin*, 125 USPQ 416 (CCPA 1960) and *In re Aller*, 105 USPQ 233 (CCPA 1955), regarding these matters.


D...All the other arguments made by applicant are considered to encompass newly added limitations and include 112 (2) rejections and/or 112(1) new matter issues, as set forth, supra.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian E. Miller whose telephone number is (703) 308-2850. The examiner can normally be reached on M-TH 7:15am-4:45pm (and every other friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.



**Brian E. Miller**  
**Primary Examiner**  
**Art Unit 2652**

bem  
March 19, 2004